



Understanding Space



The International Space Science Institute (ISSI), located in Bern, Switzerland, is an Institute of Advanced Studies in space sciences where scientists from all over the world meet in a multi- and interdisciplinary setting to reach out for new scientific horizons. ISSI is a catalyst and an international scientific joint venture.

About 900 scientists visit ISSI each year: space, ground based, and laboratory researchers, theorists, and modelers. ISSI covers a widespread spectrum of disciplines from the physics of the solar system and planetary sciences to astrophysics and cosmology, and from Earth sciences to astrobiology.

"...space, ground based, and laboratory researchers, theorists, and modelers."

Observations and data obtained from space are the building blocks of all activities. Space scientists are encouraged to pool their data, which often originate from multiexperiment satellites. The interdisciplinary

projects are not linked to specific space missions but assemble results from a wide range of different sources. Sharing, discussing, comparing, interpreting, re-interpreting, resolving controversial issues, and eventually publishing the findings are the steps of a typical ISSI activity. It is ISSI's role and ambition that the emerging results contribute to a deeper understanding of space and of the universe.

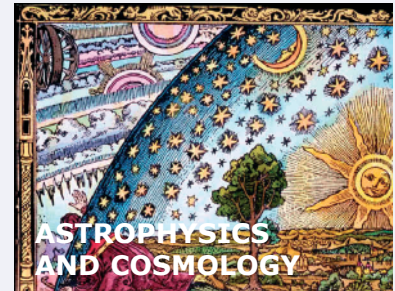
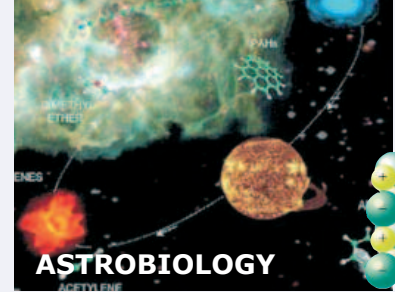
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ISSI is international interdisciplinary and interactive



The ISSI Countdown

3 000 000 Swiss francs of budget per year
750 square meters of institute surface
900 international visitors per year
47 visiting guest countries
20 workstations for guests
55 published volumes of SSSI and SR
15 staff members
5 major areas of scientific activity
4 basic operation modes and forum
3 publication series
2 floors
1 cause: understanding space



ISSI's main scientific questions

From its beginning in 1995 to date, ISSI has focused its scientific and interdisciplinary activities on solar system sciences, including connections to astrophysics, cosmology, and to Earth sciences.

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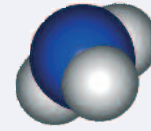
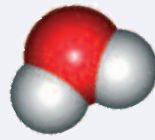
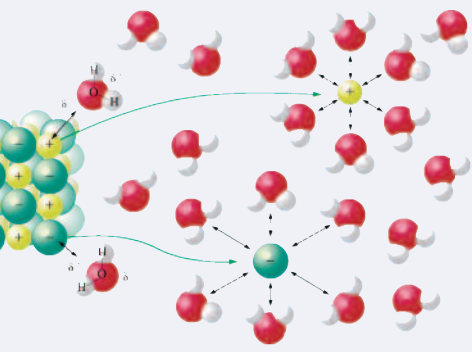
Are there possible correlations between earthquakes and ionospheric disturbances? What can we learn about our solar system through the study of other multi-planetary systems? And ultimately, how did life evolve from prebiotic chemistry?

More information about ISSI's present scientific activities, exact project titles and details on schedules and status are given on ISSI's up-to-date website:
<http://www.issibern.ch>

Scientists have worked at ISSI on questions as diverse as: Does solar activity influence the Earth's climate? Are

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How is ISSI structured?

ISSI is a nonprofit organization set up in Bern in 1995 founded under Swiss law with an initial endowment by the leading Swiss space company Contraves Space AG. ESA, the Swiss Confederation, and the University of Bern provide the financial resources for ISSI's operation. Three statutory bodies and a supporting association interact regularly in matters of strategy, operation, finance or public relations.

The Board of Trustees, presided by Simon Aegerter, oversees the work accomplished at ISSI, exerts financial control, and appoints the Directors and the Science Committee. The members of the Board of Trustees – e.g., international scientists and representatives of the funding institutions and Swiss government – generally meet twice a year in Bern.

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The **Executive** of ISSI rests on the Executive Director, Rafael Rodrigo, and three Directors, Rudolf von Steiger, Anny Cazenave and John Zarnecki, responsible for the scientific, operational, and administrative management. It interacts with the space agencies, the Swiss authorities, the Board of Trustees, the Science Committee and the Association Pro ISSI.



The Science Committee, chaired by Tilman Spohn, is made up of internationally known active scientists. It advises and supports ISSI in the establishment of the scientific agenda. The Science Committee meets twice a year.

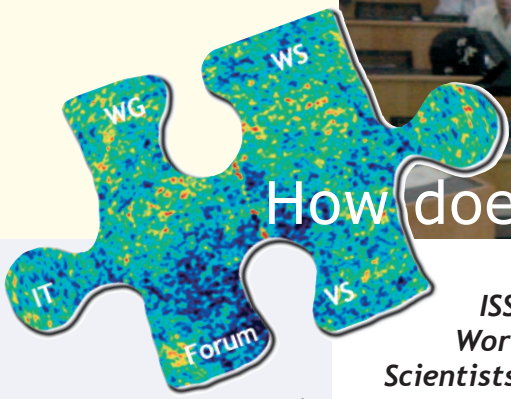
“...interacts with the space agencies, the Swiss authorities,...”

The Association Pro ISSI – Nicolas Thomas presides the Board of the Association, which counts about 150 members – promotes ISSI's

activities by organizing public lectures and public events in Switzerland.

The European Space Agency (ESA), the Swiss Confederation, and the University of Bern fund ISSI's basic operations. In addition, ISSI receives contributions from the Swiss National Science Foundation (SNF) and the Russian Academy of Sciences.

Updated information on ISSI's governing and supporting bodies can be found on its web site.



How does ISSI operate?

ISSI's operation mode is fivefold: Multi- and Interdisciplinary Workshops, Working Groups, International Teams, Visiting Scientists and Forum are the working tools of ISSI. Each tool is particularly shaped and fits with some of the dissected pieces of a specific puzzle in Space Science.

"...on the basis of a periodic open call for proposals..."

Workshops are designed by ISSI in consultation with the Science Committee and a group of the

best world experts serving as conveners. The Workshops' topics delineate long-term scientific questions. They take place in Bern during one week (sometimes repeated) and are generally attended by about 45 invited scientists. Up to four multi- and interdisciplinary Workshops are organised per year. The resulting peer-reviewed articles are published in volumes of the Space Sciences Series of ISSI (SSSI).

Working Groups have a smaller number of members but generally undergo the same selection procedure as Workshops. Working Groups gather a few times in Bern and publish their results in ISSI's Scientific Report Series (SR) or in the scientific literature.

International Teams have between 3 and 15 members and are selected on the basis of a periodic open call for proposals and after peer-review through the Science Committee. The results of the Teams' activities are customarily reported in scientific journals.

Visiting Junior and Senior Scientists follow ISSI's invitation for periods of varying extent – e.g. for a sabbatical or a post-doc term – to pursue research and perform scientific tasks of relevance to ISSI's agenda. As "scientists in residence", they participate in ISSI's daily business.

The *Forum* is an informal and free debate: around fifteen to twenty five experts are invited for brainstorming on innovative topics in the field of science, science policies and society.

ISSI Keywords

International
Interdisciplinary
Scientific
Educational
Outreaching
Public
Small
Unbureaucratic
Efficient
Center of excellence





What does ISSI produce?

Publications represent ISSI's main outcome. Besides the papers authored by the staff and visitors appearing in the scientific literature, there exist three publication series.

The Space Sciences Series of ISSI (SSSI) presents the results of study projects and Workshop activities. The volumes cover well-defined topics, synthesize and integrate Workshop debates so as to formulate an interdisciplinary interpretation of experimental data. All articles are peer-reviewed. SSSI is published by Springer and appears as a reprint from Space Science Reviews. These books are there to serve as landmarks in the progress of knowledge.

The Scientific Report Series (SR) aims at building up a library of advanced methods for analyzing experimental data, and a record of instrumentation techniques, which are deemed useful to the scientific community – from graduate students to experienced researchers. The Scientific Report Series results from international Working Groups or Teams and are published by Springer.

Together with Pro ISSI, ISSI publishes *SPATIUM*, a journal that publicizes the results of important research fields in space science, understandable to the general public.

"... so as to formulate an interdisciplinary interpretation of experimental data."



What are ISSI's origins?

ISSI's original mandate was that of generating for relatively low cost more high-quality science from the projects conducted by the various space agencies. It is to this end that ISSI was established under the initiative of Swiss scientists around Professor Johannes Geiss.

In the late 1980's, the concept of an International Space Science Institute was stressed and strongly supported by ESA in the wake of the successful cooperation set up between the four main world space agencies of the USA, Japan, Russia, and Europe (NASA, ISAS, IKI, and ESA) in the exploration of Halley's Comet and thereafter in the study of solar-terrestrial physics.

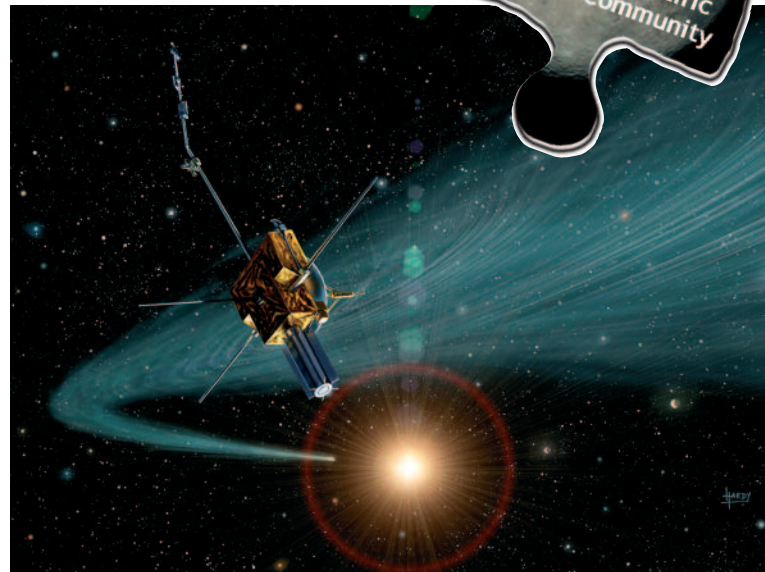
ISSI opened its doors in Bern in 1995. The IACG, political authorities, the Space Science community, industry, and the Association Pro ISSI actively endorsed and promoted ISSI's cause.

"...of generating for relatively low cost more high-quality science from the projects conducted by the various space agencies."

ISSI's most important asset lies in its interdisciplinarity, providing the necessary cross-fertilisation

between various scientific disciplines. ISSI provides the means to draw as necessary on the methods and arguments of the appropriate branches of physics,

astronomy, chemistry and Earth sciences. Such access, currently hardly affordable to an individual experimenter's group, is often the key to the interpretation of data in the wider scientific context, reaching well beyond the points of view of the individual disciplines.



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Do you wish to know more about ISSI? Are you interested in ISSI's publications? Do you need more information about ISSI's call for proposals?



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The International Space Science Institute...

... ist ein multi- und interdisziplinäres Zentrum für Weltraumforschung, das 1995 in Bern als Stiftung mit internationaler Ausrichtung gegründet wurde. Wissenschaftlerinnen und Wissenschaftler aus aller Welt und zahlreichen Fachrichtungen kommen seither am ISSI zusammen, um gemeinsam zu neuen thematischen und methodologischen Horizonten aufzubrechen. Das ISSI veranstaltet disziplinenübergreifende Workshops, bildet internationale Forschungsgruppen oder organisiert öffentliche Vorträge – und vernetzt so die Aktivitäten im In- und Ausland. Der inhaltliche Fokus richtet sich dabei auf unser Sonnensystem, auf die Planetologie, die Erdwissenschaften, auf die Astrophysik und die Kosmologie sowie auf die Astrobiologie. Die Resultate der ISSI Workshops und Forschungsgruppen werden in eigenen Publikationsreihen oder in der Fachliteratur veröffentlicht. ISSI wirkt als Katalysator und bildet ein dynamisches, interaktives, internationales und notwendiges Forum der Weltraumforschung.

... est un institut d'études avancées dans le domaine de la recherche spatiale. Dans le cadre d'une fondation privée ISSI réunit depuis 1995 à Bern des scientifiques du monde entier dans un cadre multi-et interdisciplinaire. Par le biais d'ateliers, d'équipes scientifiques, de groupes de travail ou de présentations publiques, l'ISSI tisse un réseau unique de compétences et de recherches scientifiques au niveau mondial. L'étude du Système Solaire, la planétologie comparée, les sciences de la terre, l'astrophysique et la cosmologie, l'astrobiologie et les relations soleil-terre constituent le coeur scientifique du programme de l'ISSI. Ces activités donnent systématiquement lieu à publications soit dans la série de livres de l'ISSI soit dans la littérature spécialisée. L'ISSI agit comme catalyseur et forme une plateforme de recherche dynamique, interactive et internationale.

... è un Istituto di studi avanzati nel campo della ricerca spaziale. Iniziò l'attività a Berna in Svizzera nel 1995 sotto la forma di una Fondazione a vocazione internazionale. L'ISSI riunisce ricercatori di vari paesi in un quadro inter e multidisciplinare tendente a raggiungere nuovi orizzonti tematici e metodologici. Attraverso l'organizzazione di conferenze e gruppi di lavoro l'ISSI tesse una rete di relazioni internazionali. L'attività scientifica si indirizza al sistema solare, la geofisica, l'astrofisica e la cosmologia, l'astrobiologia, la planetologia comparata e le relazioni Sole-Terra. I risultati delle attività vengono pubblicati in riviste scientifiche e in una speciale serie di volumi. In sintesi, ISSI agisce da catalizzatore e costituisce una piattaforma di ricerca dinamica, interattiva e internazionale.



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